Full Length Research Article

EXPORT PERFORMANCE OF OTHER PROCESSED FRUITS AND VEGETABLES FROM INDIA

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ARTICLE INFO	ABSTRACT
	Status of other processed fruits and vegetables in respect of its export from India was studied for the period from the year 1989-90 to 2013-14 with respect to major export destinations. Status was examined by estimating mean, compound growth rate, instability and diversification. Ray method was used to estimate the instability and diversification status was examined with the help of Simpson Index of Diversification.CGR were estimated by employing best fit functional form to the export data. United State of America, Saudi Arab, United Kingdom, Netherland and UAE were the major export destination of other processed fruits and vegetables from India in terms of quantity as well as value during the study period. Average growth in this export sector was 14.53 and 21.07 per cent w.r.t. quantity and value, respectively. High growth was coupled with high instability was observed. Moderate level of instability was observed at overall level. Except during initial levels, high level of diversification was observed.

INTRODUCTION

The term 'food processing' is mainly defined as a process of value addition to the agricultural or horticultural produce by various methods like grading, sorting and packaging. In other words, it is a technique of manufacturing and preserving food substances in an effective manner with a view to enhance their shelf life; improve quality as well as make them functionally more useful. It covers a spectrum of products from sub-sectors comprising agriculture, horticulture, plantation, animal husbandry and fisheries. It helps to diversify and commercialize farming; enhance the income of farmers; create markets for export of agro foods as well as generate greater employment opportunities. In short, we can say that," food processing encompasses all the steps that food goes through from the time it is harvested to the time it arrives on the consumer's plate." (Saraswati, 2014). The fruit and vegetable processing industry in India is highly decentralized having wide capacities. The diverse agro- climatic zones make it possible to grow almost all varieties of fresh fruits and green vegetables in India. India is the second largest producer of fresh vegetables in the world (ranks next to China) and accounts for about 15% of the world's production of vegetables.

Since liberalization and withdrawal of excise duty on fruit and vegetable products there has been significant rise in the growth rate of the industry. Out of 370 million tons of fruit production in the world, India accounts for 30 million tons. (DGCIS). The country has exported 3,16,059.43 MT of processed fruits and vegetables to the world for the worth of Rs. 2,569.93 crores during the year 2014-15.

MATERIALS AND METHODS

The study is based on the secondary time series data from the year 1989 to 2014 of quantity and value of export of Other Processed Fruits and Vegetables from India. Other Processed Fruits and Vegetables commodity which was export from India is given below. The required data were collected from Directorate General of Commercial Intelligence and Statistics (DGCIS Annual Export), APEDA and agriXchange (http://agriexchange.apeda.gov.in/). For the analysis of composition of agricultural exports appropriate statistical tools like percentage, share index, average values, Compound Annual Growth Rate (CAGR), Instability and Diversification were used.

Compound Growth Rate

The Export performance of Other Processed Fruits and Vegetables in the India was examined by estimating compound growth rates for Quantity and Values as follows:

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$Y_t = A b_t$

Where,

Y_t = Quantity and Values of Export in i^{th} period,

b=1+r

r = Compound growth rate of Y,

A=Initial year Quantity and Values of Export (Constant) and

t = Time variable in years (1,2,………25)

After log transformation and estimation of the above function as

ln Y_t = ln A+ t ln b, compound growth rate has been estimated as;

r = {antilog (ln b) - 1}*100

Instability

Ray (1983) developed a very simple measure of instability given by the standard deviation in annual growth rates. This method satisfies the properties like instability based on de-trended data and comparability. Moreover, the methodology does not involve actual estimation of the trend, computation of residuals and de-trending, but all these are taken care in the standard deviation of annual growth rates. In short this method is as follows;

Instability index = Standard deviation of natural logarithm of (Y_t+1/ Y_t)

Where, Y_t is the Quantity and Value in the current year and, Y^t+1 is same for the next year. This index is unit free and very robust, and it measures deviations from the underlying trend (log linear in this case). When there are no deviations from the trend, the ratio of Y_t+1/ Y_t is constant and thus standard deviation is zero. As the series fluctuates more, the ratio of Y_t+1 and Y_t also fluctuates widely, and the standard deviation increases.

Simpson Index of Diversification

The Simpson Index (SID) was calculated to find the extent of diversification of other processed fruits and vegetables among various export destinations. This was worked out using following equation.

$$\text{Simpson Index Of Diversification} = \left[I - \left(\sum_{\square=0}^{\square} W_i^2 \right) \right]$$

$$W_i = \frac{X_i}{\sum X_i}$$

Where

X_i = Quantity and Values of Export in i^{th} period

W_i = Proportionate Quantity and Values of Export in i^{th} period in the total

RESULT AND DISCUSSIONS

The average exports of other processed fruits and vegetable were estimated for last twenty five years and were presented in Table 2 on perusal of table II, it was seen that, United State of America, Saudi Arab, United Kingdom, Netherland, and UAE were the top five export destination from India. The average quantity of processed fruits and vegetables exported to these countries were 16857.50, 11939.12, 9777.27, 8963.45 and

7052.52 MT, respectively during the study period. Similar trend was observed in respect of value realization.

Table 1. List of Processed Fruits and Vegetables Exported from India

Apple Juice	Asparagus preserved
Beans Shelled	Cherries
Chips Fried	Dried Apples
Dried Apricots	Fruit & Nuts
Uncooked or Cooked	Grape Juice
Grapefruit Juice	Jam Jellies of Apple
Jam Jellies of Other Fruits	Mango Juice
Lemon Juice	Olives
Pineapple Juice	Sweet corn
Tomato Juice	Tomato Prepared of Preserved

Table 2. Average Export of Other Processed Fruits and Vegetables from India to major countries (1989-90 to 2013-14)

Sr. No.	Name of Countries	Quantity (MT)	Values (Rs. Lakh)
1.	Iran	1518.90	1115.92
2.	Australia	1992.62	1111.10
3.	Philippines	843.65	292.86
4.	Israel	1239.50	564.48
5.	Japan	-	1249.05
6.	Indonesia	3743.53	1024.22
7.	Canada	3180.28	1277.03
8.	Netherland	8963.45	4816.48
9.	Bangladesh Pr	3097.38	-
10.	Saudi Arab	11939.12	4962.21
11.	U S A	16857.50	9527.67
12.	U K	9777.27	4940.75
13.	Malaysia	2903.69	693.35
14.	Russia	2127.70	729.82
15.	U Arab Emts	7052.53	3419.80
16.	Germany	2050.83	1091.44
17.	Singapore	1027.51	427.63
18.	Yemen Republc	1023.64	306.52
19.	Sri Lanka Dsr	649.26	-
20.	All	102892.82	48616.37

Country wise Growth and Instability

The country-wise export growth rate of other Processed Fruits and Vegetables in India in terms of quantity and values were collected from the best fitted functional form, for the year 1989-90 to 2013-14 and are presented in Table 3. So far as export to quantity to all the countries was concerned maximum growth rate was observed with respect to Others Processed fruits and vegetables for Iran followed by Australia, Philippines, Israel, Indonesia, Canada, Netherland, Bangladesh Pr, Saudi Arab, U S A, U K, Malaysia, respectively. (37.54%, 31.52%, 25.22%, 24%, 19.86%, 19.72%, 19.51%, 19.01%, 18.82%, 17.11%, 15.74%, 15.31%). Overall growth rate of quantity was observed to be 14.53%.

Maximum instability in export (quantity) of other processed fruits and vegetables country was observed in Israel followed by Iran, Philippines, Indonesia, Malaysia, Sri Lanka Dsr, Russia, Australia, Bangladesh Pr, Canada, respectively.(149%, 142.2%, 131.2%, 115.4%, 106.1%, 105.4%, 90.28%, 78.67%, 74.89%, 73.9%). Overall instability of quantity was observed to be 22.20 %. In case of value, maximum growth rate was found in respect of other processed fruits and vegetables countries in Iran followed by Australia, Philippines, Israel, Japan, Indonesia, Saudi Arab, Netherland, Canada, UK, USA,

U Arab Emts, respectively. (48.13%, 35.97%, 33.65%, 29.9%, 28.17%, 25.74%, 25.55%, 25.02%, 23.88%, 23.11%, 23.01%, 21.14%). Total growth rate of value was found 21.07%.Country wise highest instability of export related other processed fruits and vegetables from India was recorded in Israel followed by Philippines, Indonesia, Iran, Russia Malaysia, Yemen Republc, Australia, Japan, Germany, Canada, respectively.(142.8%, 106.2%, 103.1%, 91.94%, 91.66%, 82.59%, 72.86%, 71.67%, 67.17%, 65.24%, 62.52%) Total instability of value was observed 20.88%.

countries. Shift of export from one country to other countries was depends on several factors like government policies, foreign policies, trade policies, availability of markets etc. The horizontal diversification increases export of different countries from India. The extent of horizontal diversification can be gauged empirically through Simpson's index of diversification (SID). The Simpson index of diversification was computed to evaluate the extent of diversification of Other Processed Fruits and Vegetables across the Major Countries From India, beginning and end of 1989-1990 to 2013-14 and

Table 3. Country wise Growth and Instability of Export of Other Processed Fruits and Vegetables from India (1989-90 to 2013-14)

Sr. No.	Name of Countries	Quantity (MT)		Values (Rs. Lakh)	
		Growth	Instability	Growth	Instability
1.	Iran	37.54	142.20	48.13	91.94
2.	Australia	31.52	78.67	35.97	71.67
3.	Philippines	25.22	131.20	33.65	106.20
4.	Israel	24.00	149.00	29.90	142.80
5.	Japan	-	-	28.17	67.17
6.	Indonesia	19.86	115.40	25.74	103.10
7.	Canada	19.72	73.90	23.88	62.52
8.	Netherland	19.51	54.74	25.02	57.24
9.	Bangladesh Pr	19.01	74.89	-	-
10.	Saudi Arab	18.82	33.77	25.55	31.66
11.	U S A	17.11	43.93	23.01	42.67
12.	U K	15.74	34.97	23.11	30.23
13.	Malaysia	15.31	106.10	19.93	82.59
14.	Russia	15.28	90.28	17.53	91.66
15.	U Arab Emts	13.51	25.07	21.14	24.55
16.	Germany	12.49	61.92	17.74	65.24
17.	Singapore	8.08	55.11	14.33	50.37
18.	Yemen Republc	7.14	57.15	13.92	72.86
19.	Sri Lanka Dsr	6.16	105.40	-	-
20.	All	14.53	22.20	21.07	20.88

Table 3. Diversification Status of Other Processed Fruits and Vegetables across the Major Countries from India

Sr. No.	Years	No. of Export Destinations	Quantity (MT)	Values (Rs. Lakh)
1.	1989-90	48	0.78	0.83
2.	1990-91	52	0.92	0.92
3.	1991-92	42	0.88	0.88
4.	1992-93	47	0.90	0.86
5.	1993-94	64	0.89	0.86
6.	1994-95	75	0.89	0.86
7.	1995-96	71	0.90	0.88
8.	1996-97	64	0.91	0.88
9.	1997-98	64	0.93	0.92
10.	1998-99	69	0.92	0.90
11.	1999-00	78	0.91	0.90
12.	2000-01	83	0.87	0.89
13.	2001-02	82	0.89	0.88
14.	2002-03	89	0.90	0.88
15.	2003-04	109	0.89	0.87
16.	2004-05	107	0.88	0.88
17.	2005-06	122	0.92	0.91
18.	2006-07	128	0.91	0.89
19.	2007-08	124	0.92	0.91
20.	2008-09	125	0.92	0.91
21.	2009-10	125	0.93	0.92
22.	2010-11	130	0.93	0.91
23.	2011-12	141	0.92	0.91
24.	2012-13	135	0.94	0.93
25.	2013-14	141	0.93	0.93
	Total		0.90	0.89

Diversification Status

Diversification offers a wider choice of export of Others Processed fruits and vegetables from India to the other

has been presented in Table IV in the form of quantities and values. The diversification value (SID) in respect of other processed fruits and vegetables across the major countries from India were ranged from 0.94 in 2012 to 13 to 0.78 in

1989 to 1990. In the case of values, diversification value of other processed fruits and vegetables across the major countries were ranged in between 0.93 in both years 2012 to 2014 to 0.83 in 1989 to 1990. The export destination in respect of other processed fruits and vegetables were increased over the year. The number of export destination was 48 in 1980-1990 which was related to 141 in 2013-2014. It is recorded that number of export destination was increases year wise. It means exports of other processed fruits and vegetables from India to other countries were increased from year to year.

Conclusion

United State of America, Saudi Arab, United Kingdom, Netherland and UAE were the major export destination of other processed fruits and vegetables from India in terms of quantity as well as value during the study period. Average growth in this export sector was 14.53 and 21.07 per cent w.r.t. quantity and value, respectively. High growth was coupled with high instability was observed. Moderate level of instability was observed at overall level. Except during initial levels, high level of diversification was observed.

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